

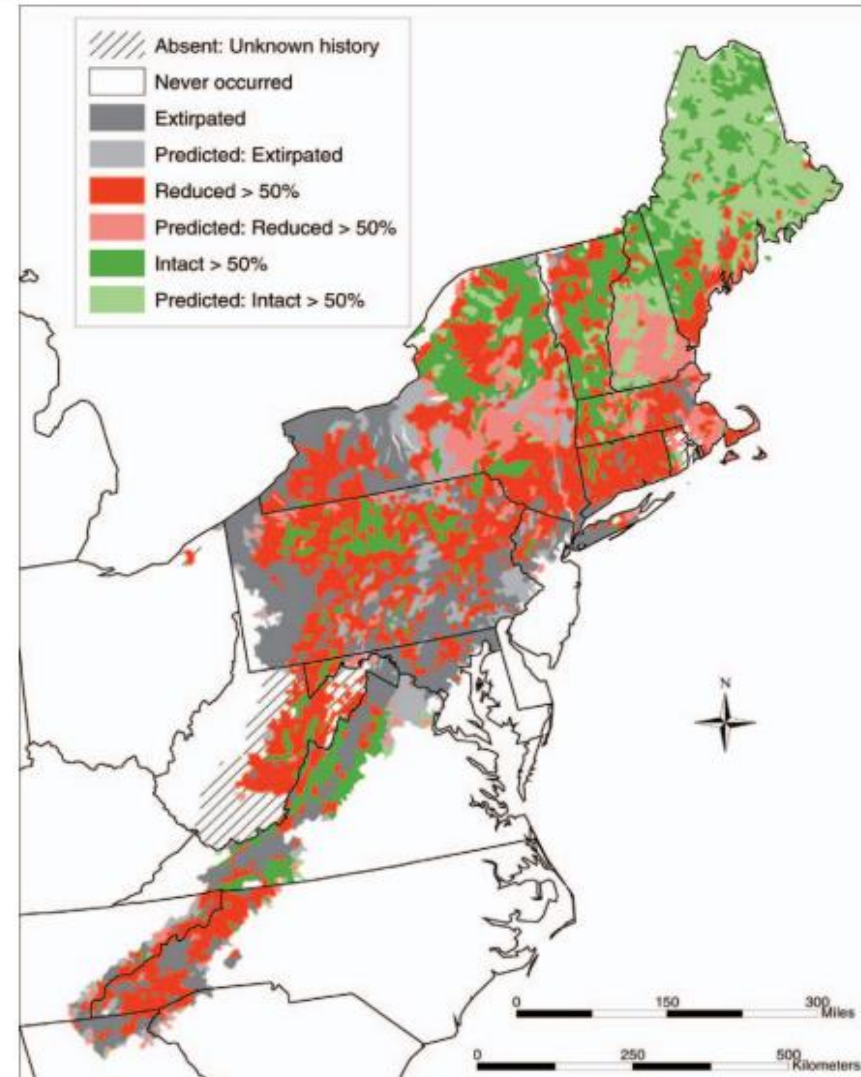
Brook Trout Status and Conservation in Maryland



Maryland DNR Coldwater Fisheries Program
STAC Workshop - 6/3/2025
Carroll County Agriculture Center

Background

- Eastern brook trout native range extends from Canada to the Appalachian Mountains in Georgia
- Coldwater species, very sensitive to temperature and sediments
- Become extirpated when land use practices in the watershed reduce forest cover and increase impervious surfaces
- Declines in occupancy observed throughout native range
- Hudy et al. (2008) estimated >60 percent reduction in Maryland

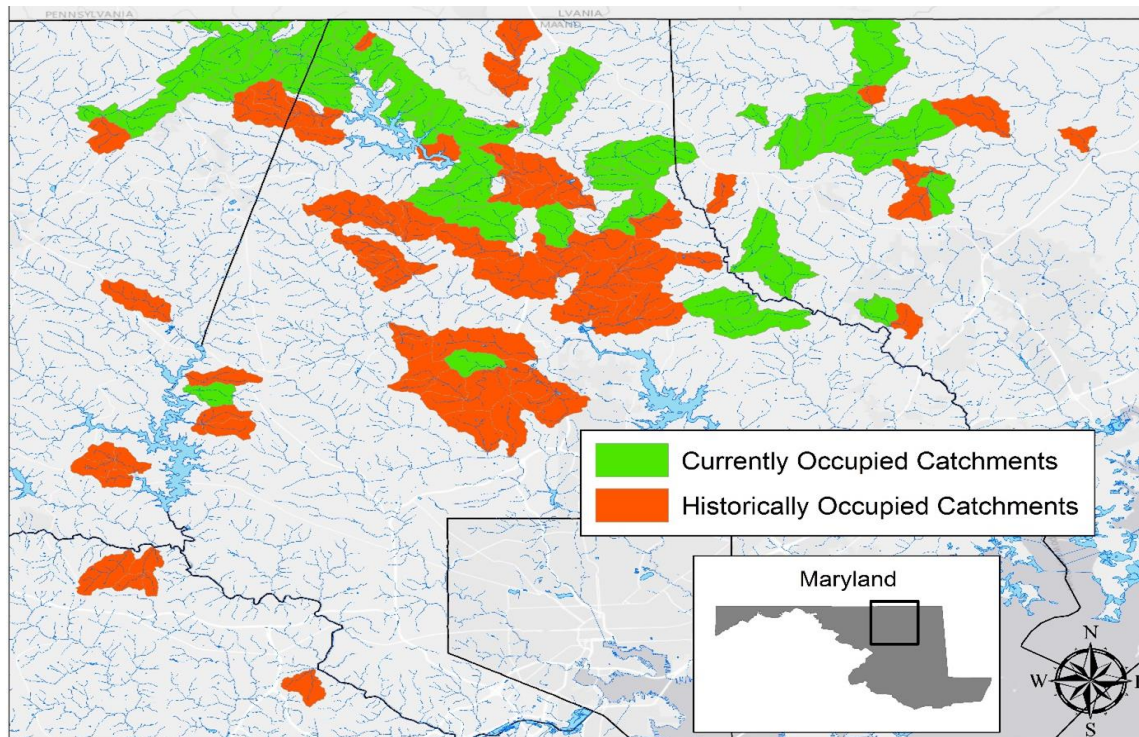


Hudy et al. 2008

Delines in Maryland

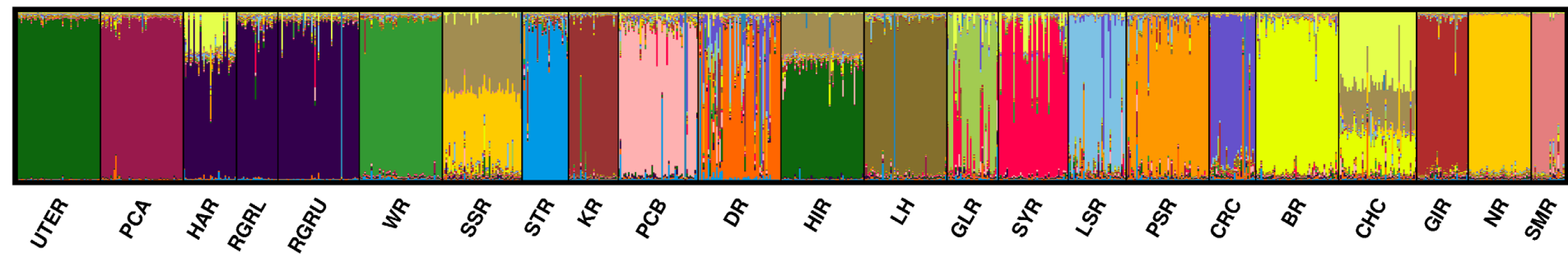
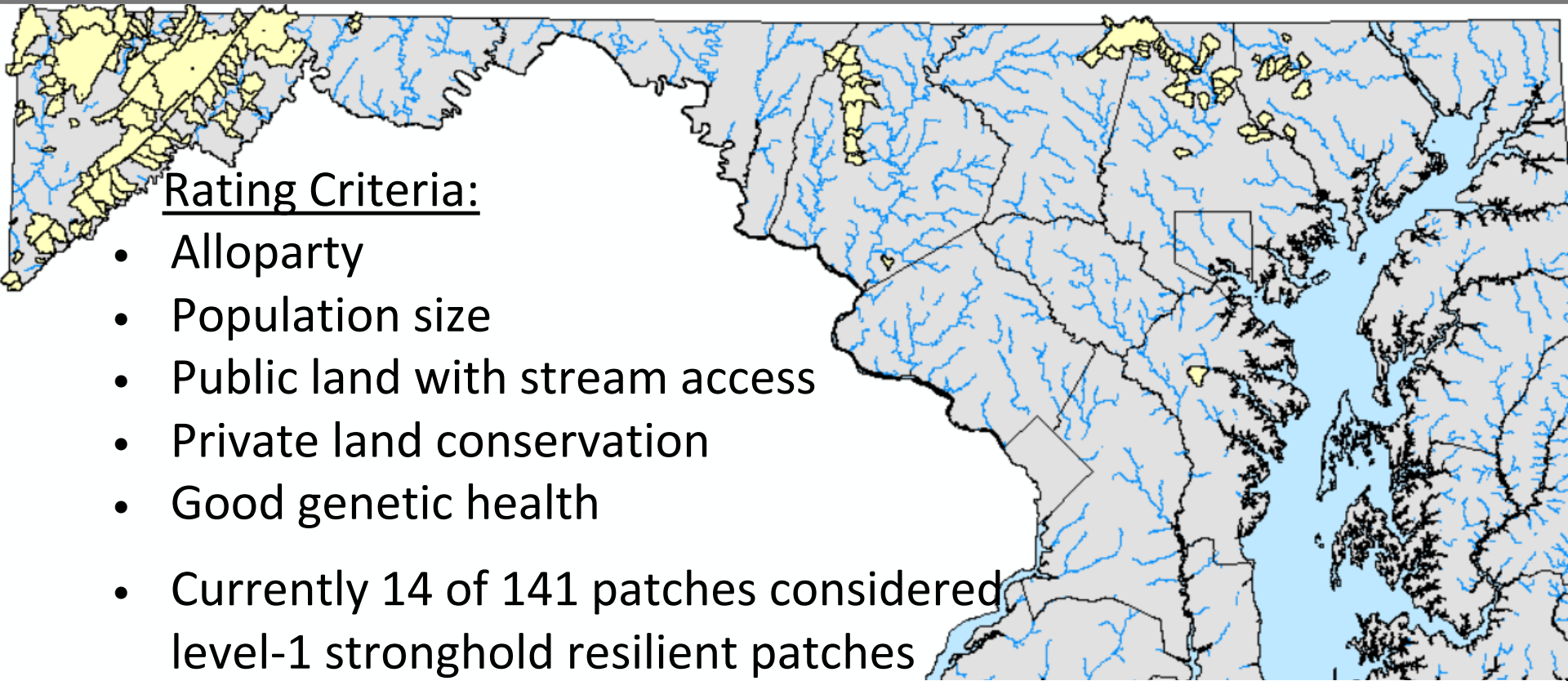


- Statewide brook trout assessment (HUC-14 scale)
 - 1987-2013 compared to 2014-2018
 - 27% loss in occupancy at the HUC-14 scale statewide
 - 49% loss in Piedmont



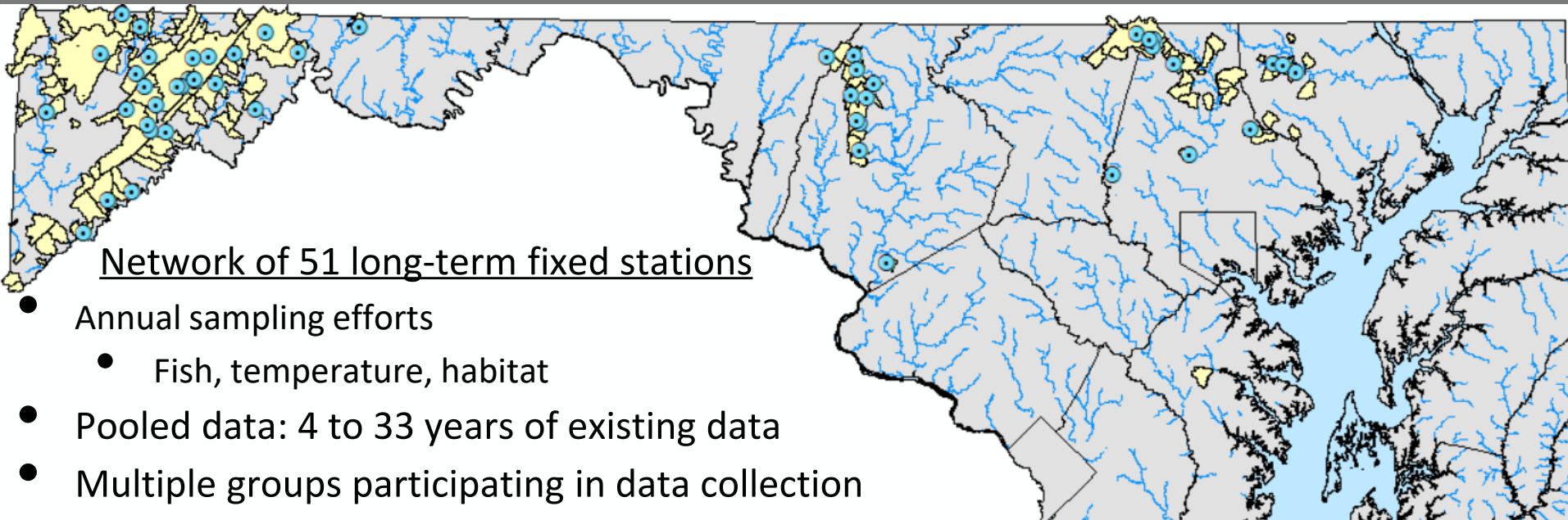
Brook Trout Strategic Plan

-Patch Assessment



Population Monitoring

-Brook Trout Monitoring Network

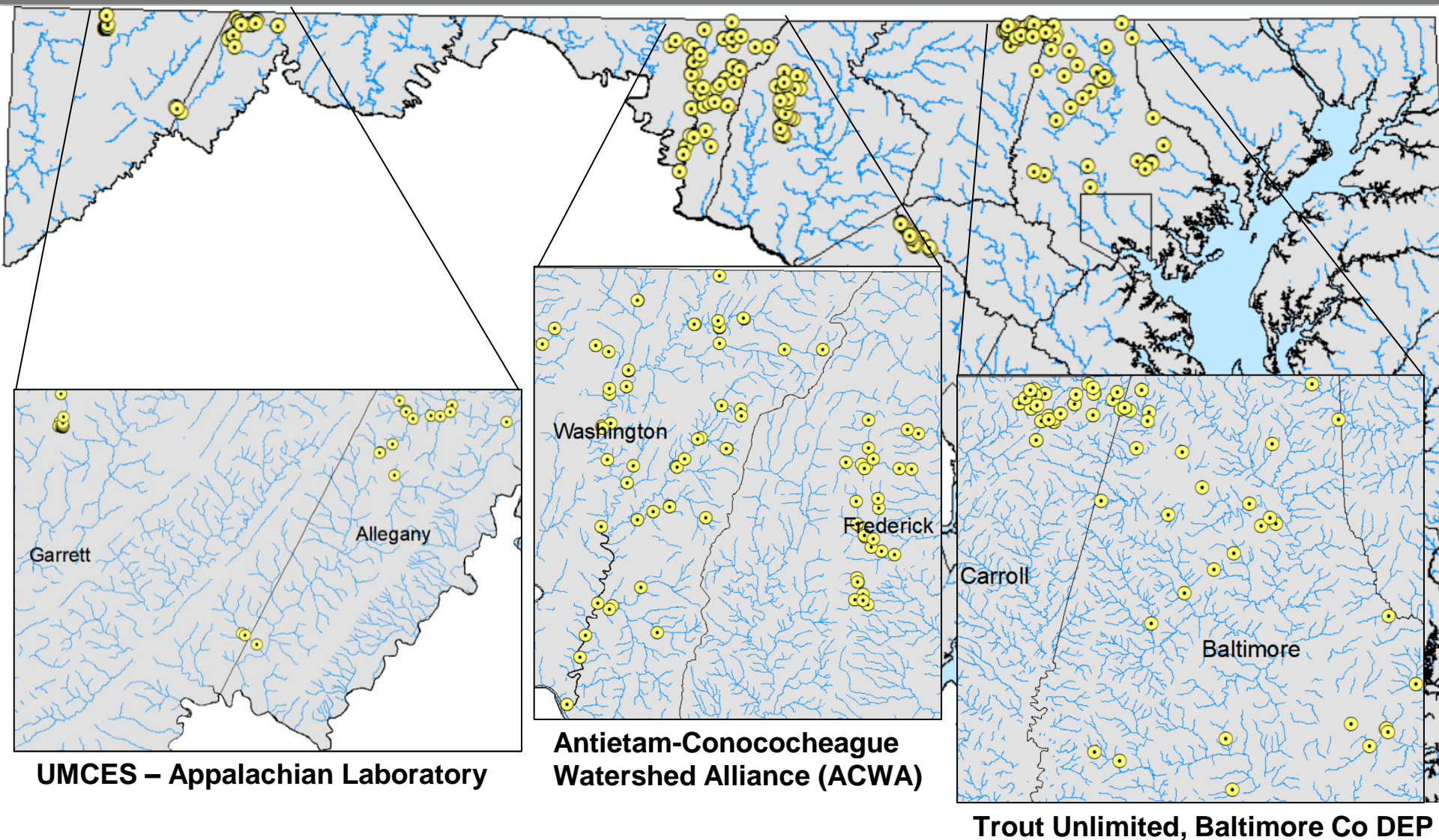


Network of 51 long-term fixed stations

- Annual sampling efforts
 - Fish, temperature, habitat
- Pooled data: 4 to 33 years of existing data
- Multiple groups participating in data collection
 - Regional Staff, Coldwater program, MBSS program
- Breadth of conditions supporting brook trout within the state
 - Monitor populations statewide
 - Various stressors
 - Land use, temperature, competition, AMD, etc
 - Track various brook trout restoration efforts with identifiable benchmarks



Data Sharing from Partners

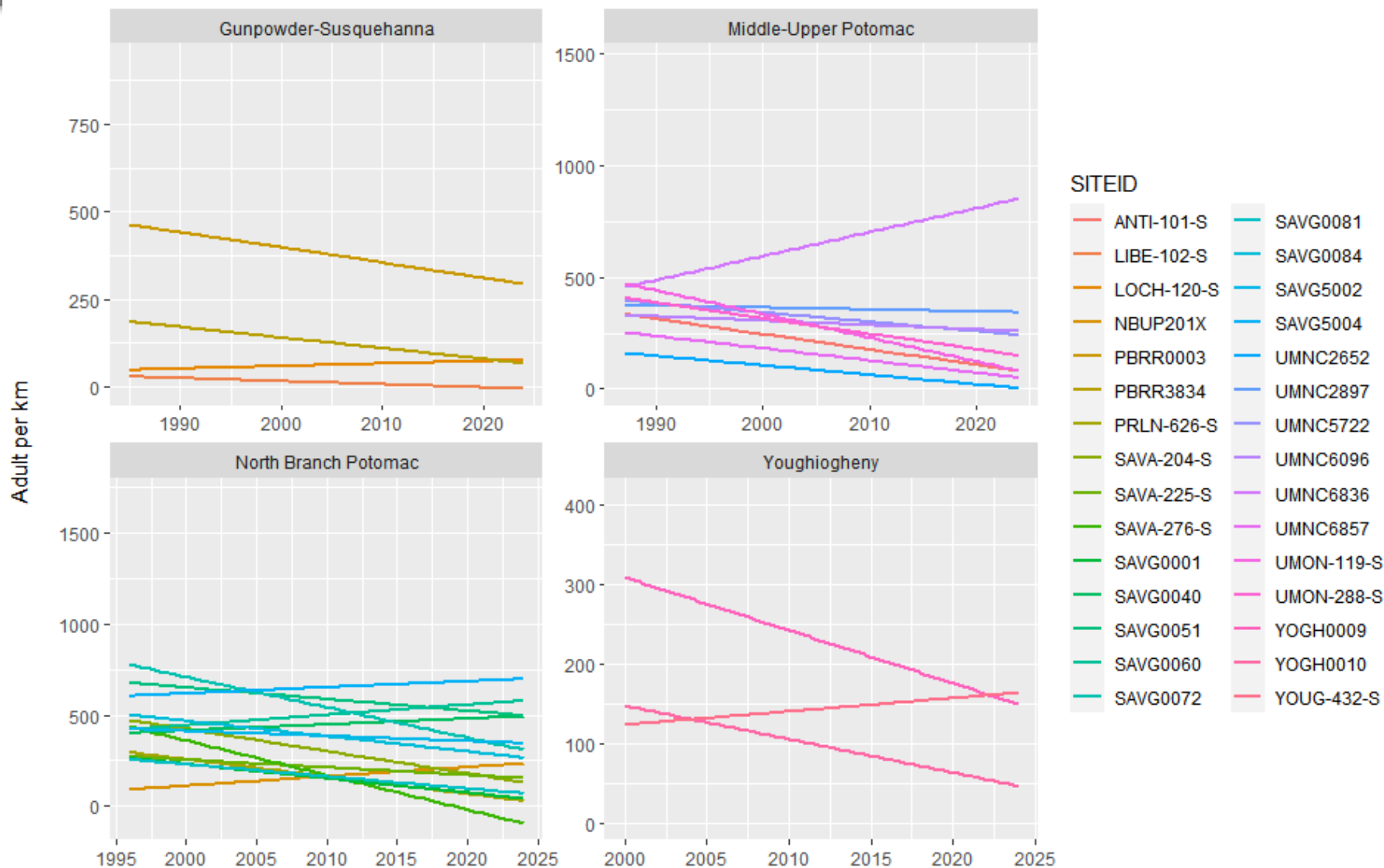


UMCES – Appalachian Laboratory

Antietam-Conococheague Watershed Alliance (ACWA)

Trout Unlimited, Baltimore Co DEP

Minimum 10 years by river basin



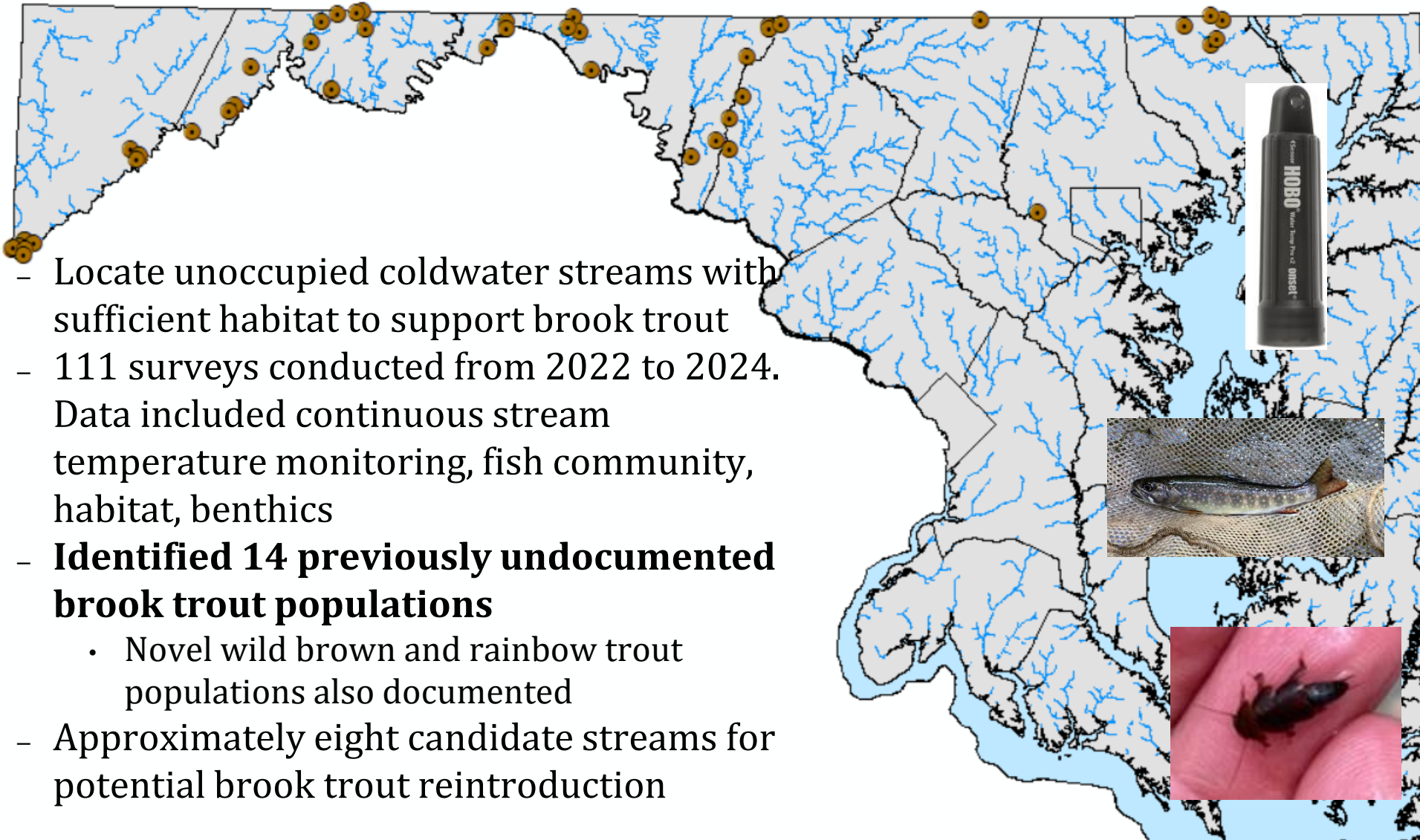
Minimum 10 years by brook trout patch



Adult per km



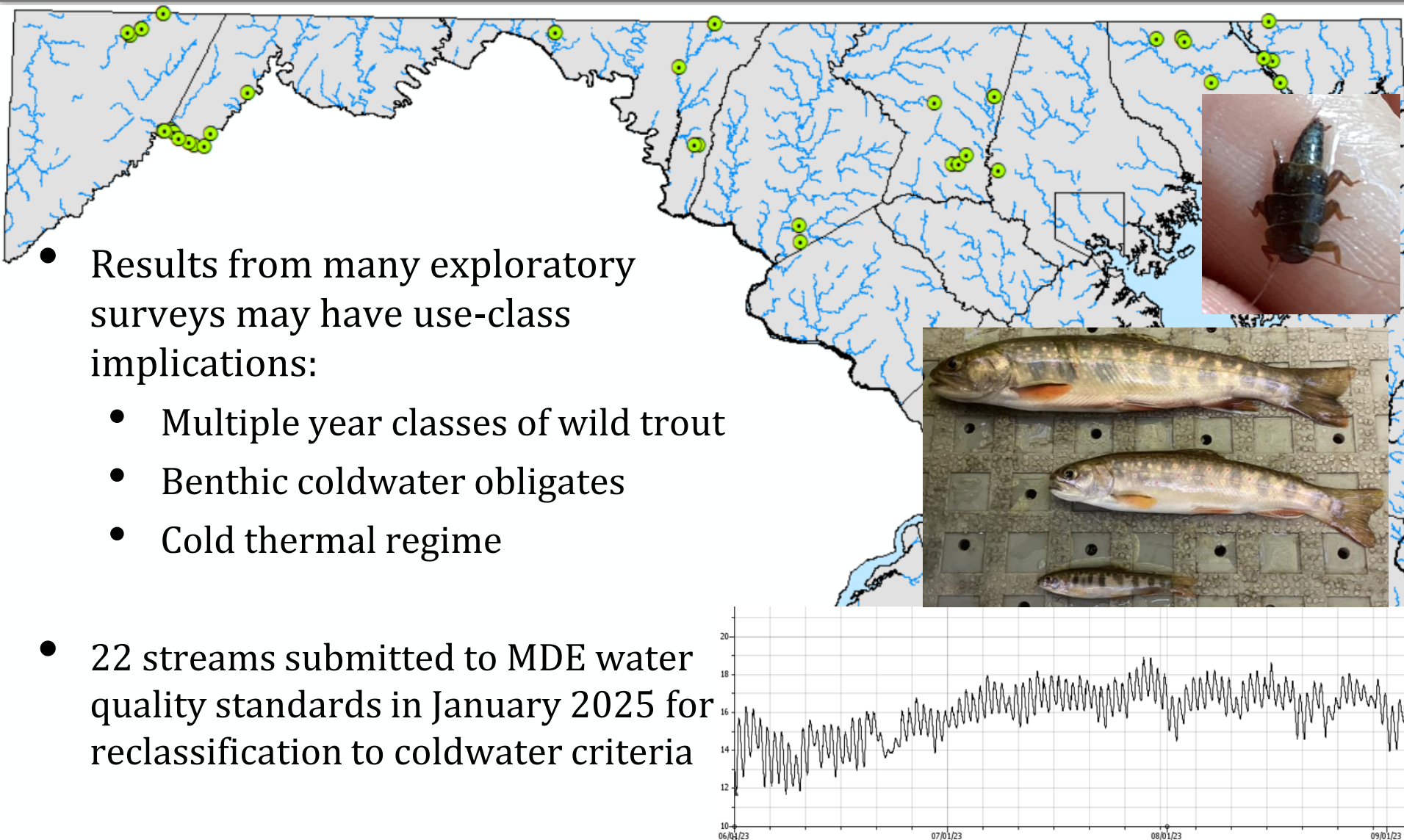
Coldwater Potential



- Locate unoccupied coldwater streams with sufficient habitat to support brook trout
- 111 surveys conducted from 2022 to 2024. Data included continuous stream temperature monitoring, fish community, habitat, benthics
- **Identified 14 previously undocumented brook trout populations**
 - Novel wild brown and rainbow trout populations also documented
- Approximately eight candidate streams for potential brook trout reintroduction

Use class implications

- Results from many exploratory surveys may have use-class implications:
 - Multiple year classes of wild trout
 - Benthic coldwater obligates
 - Cold thermal regime
- 22 streams submitted to MDE water quality standards in January 2025 for reclassification to coldwater criteria



Brook Trout Reintroduction



- Three brook trout translocation attempts in progress
 - Source streams selected based on source population density, genetic health, similarity of habitat and proximity to receiving stream
 - Approximately 100 individuals translocated in initial effort
 - Transferred using coolers - low density maintained and travel distance minimized
 - Survival and successful reproduction?
 - We hope to find out in 2025
 - Future efforts include propagation



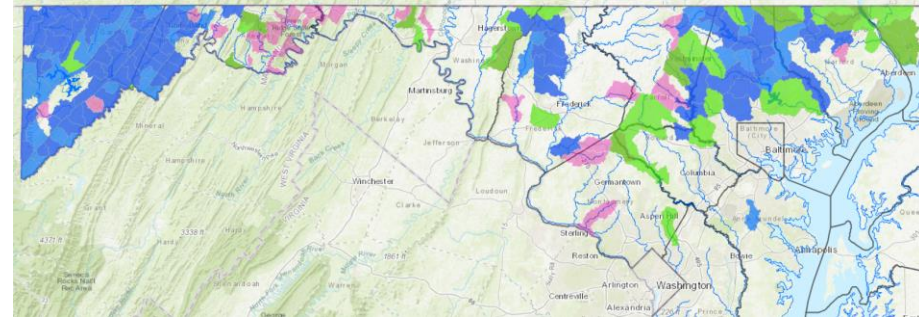
Conservation efforts



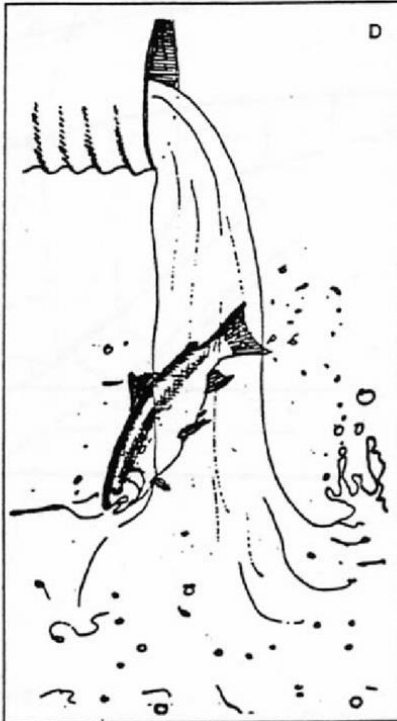
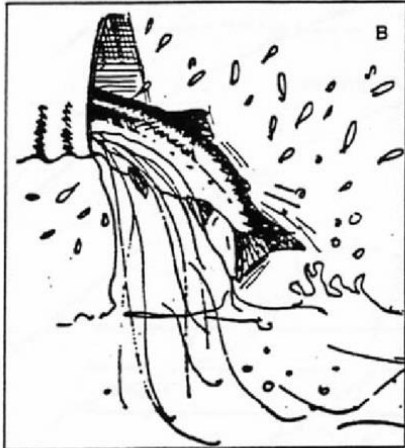
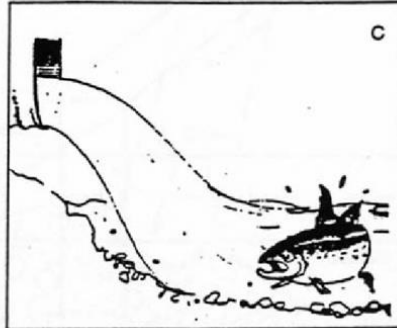
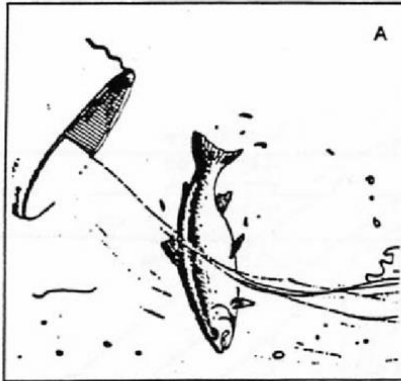
- Brook Trout Fishery Management Plan (2006)
- Regulatory Changes
 - Zero creel east of I-81 and in Upper Savage River
- Species of Greatest Conservation Need (MD SWAP)
- Chesapeake Bay Watershed Agreement signatory
- Non-native trout removal policy 2024
 - Highly protective of allopatric brook trout patches
 - Implementation status TBD in sympatric patches
- Environmental Review
 - Coldwater Resources Mapping Tool
 - Established part of permit review process from MDE
 - Comments and recommendations on projects in wild trout and coldwater watersheds
- Partnerships
 - Trout Unlimited on AOP, landowner outreach and engagement, riparian plantings, environmental education
 - Garrett Co DPW on AOP projects
 - MDE AML on brook trout recovery after AMD remediation
 - County gov and watershed group monitoring programs



Prepared by
Maryland Department of Natural Resources
Fisheries Service
Inland Fisheries Management Division



Connecting fish passage and flood resiliency



A - Velocity too great
B - Flow in thin stream over bottom
C - No resting pool below culvert
D - Jump too high

- Undersized crossings create movement barriers (low flow, velocity, and vertical drops) by constricting a stream's channel width
- Design approaches that improve fish passage necessarily employ larger structures, increasing a crossings hydraulic capacity during large storm events
- In many cases, life-cycle costs for installing larger structures have been shown to be more cost effective

UT to Bluelick Run



- Trout Unlimited led project (Western MD initiative)
- FundingUSFWS National Fish Passage Program, NFWF small watersheds, EBTJV

Sand Spring Run



- Trout Unlimited led project (Western MD initiative)
- Funding: USFWS National Fish Passage Program, CB field office, NFWF small watersheds, EBTJV
 - Project completed summer 2020
- 1500ft of restoration/stabilization/habitat work planned 2025

Project: Wolfden Run - Kitzmiller



- Garrett County DPW and Trout Unlimited led project
- USFWS National Fish Passage Program – Project completed Fall 2024



Planned: Big Run Flood Resiliency Project



- 4 road stream crossing projects planned for Big Run within Savage River State Forest
- Maintains access to recreational opportunities in Savage River State Forest and Big Run State Park
- Area experiences frequent flooding and existing infrastructure is undersized and in poor condition



Questions?

